

Semester:	3			
Course Code:	EM2020			
Course Name:	Probability and Statistics			
Credit Value:	2 (Notional hours:100)			
Prerequisites:	None			
Core/Optional	Core			
Hourly Breakdown	Lecture hrs.	Tutorial hrs.	Assignment hrs.	Independent Learning & Assessment hrs.
	24	4	4	68

Course Aim: To introduce basic concepts of probability and inferential statistics.

Intended Learning Outcomes:

On successful completion of the course, the students should be able to;

- **Demonstrate** fundamental probability and statistical concepts.
- **Apply** standard discrete and continuous probability distributions and observe their role as the foundation for statistical inference.
- **Perform** estimation and testing of hypotheses on common measures in decision making.

Course Content:

- **Concepts of probability:** Discrete and continuous random variables, probability distributions, mean, expectation and variance, moment generating functions
- **Discrete probability distributions:** Bernoulli (Point binomial) Distribution, Binomial distribution, Poisson distribution, geometric distribution, Hypergeometric distribution.
- **Continuous probability distributions:** Uniform distribution, exponential distribution, normal distribution, Student-t distribution, Weibull distribution and Chi-squared distribution.
- **Sampling distributions:** The central limit theorem and normal approximation to the binomial distribution, sampling distribution of sample mean and sample variance.
- **Estimation and Confidence Intervals:** Estimation and calculation of Confidence Intervals for mean, difference of means and variance.
- **Test of Hypothesis:** Test of hypothesis for mean and difference of means

Teaching /Learning Methods:

Classroom lectures, tutorial discussions and in-class assignments

Assessment Strategy:			
Continuous Assessment 40%	Final Assessment 60%		
Details: Tutorials/Assignments/Quizzes 10% Mid Semester Examination 30%	Theory (%) 60%	Practical (%) -	Other (%) -
Recommended Reading:			
<ul style="list-style-type: none"> ● D.C. Montgomery and G.C. Runger Applied Statistics and Probability for Engineers, 6th edition,(2013), John Wiley and Sons Inc. ● Jay L. Devore, Probability and Statistics for Engineering and the Sciences, 8th edition, (2010), Cengage Learning. 			